MONTHLY JOURNAL OF
THE MUSHROOM GROWERS'
ASSOCIATION

MGA

BULLETIN

MARCH, 1957 · NUMBER 87

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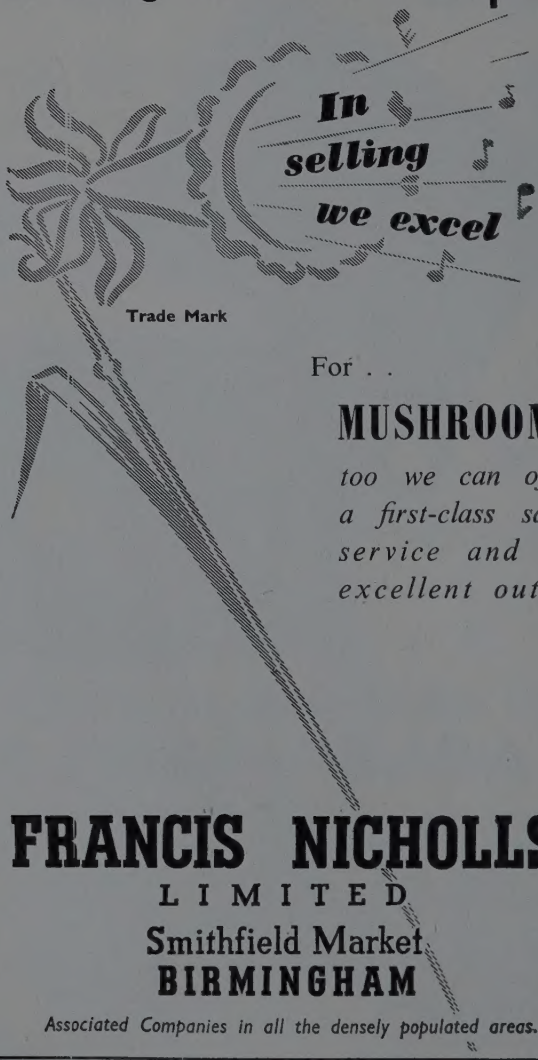

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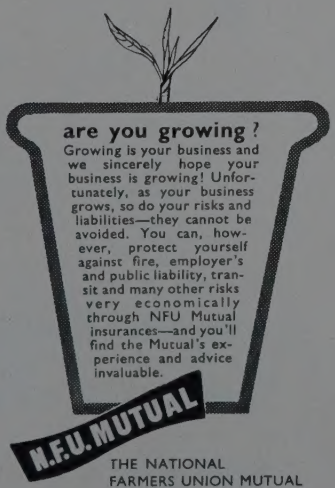
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Tib. 292

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EDITORIAL

CHEER UP!

During the past month one of the main topics of conversation amongst mushroom growers has been the news of the Linfield expansion, the planned rise from 5 million lb. per year to no less than 7½ million.

It was stated here last month that this increase represented no less than 16%, but that was an error for which an apology is due. The expansion figure represents 6% on the overall production in this country, not 16% as was stated.

In that error alone growers large and small may well draw a moral —that the picture is rarely as bad as it appears at first sight.

It is true enough that the announcement of the Linfield expansion has caused considerable alarm and concern. Yet, viewed in its proper light, an expansion of 6% should not cause undue worry to the mushroom grower pure and simple, especially he who bends his entire thought and energy to the production of mushrooms alone. To those who seek to make quick profits by entering the field when prices are high and leaving it when prices decline, the writing is well and truly on the wall for it may well be that this production increase—and bear in mind that increased production is not likely to be confined to Linfields alone—may result in a levelling out process. There is some evidence that a levelling of price returns is already on the way and that the gap between the peak and minimum price periods is closing noticeably. It needs only a stimulation of demand in the late summer months to complete this price level picture. Publicity at the right time, plugging the use of raw mushrooms in salads for instance, might bring this about.

Take heart therefore ye who, for the moment anyway, appear to be heavy laden, for the picture is rarely as black as it is painted and certainly, for the efficient producer, is not as black as was painted in this particular column last month. For the catch crop producer, however, it is an entirely different matter. WRA.

EXECUTIVE COMMITTEE

Refresher Course only in 1957—Full Exhibition and Conference 1958

At a meeting of the MGA Executive Committee in London, on 20th February, reports from five sub-committees operating, viz., Publicity, Southport, Suggested MGA Experimental Farm, Research, Area Committees and Postal Voting, were among the many matters considered.

Refresher Course. Mr. F. Bleazard stated that the Southport (2nd and 3rd Oct.) sub-committee had carefully considered the matter of the suggested Southport programme and recommended that the programme should consist of a refresher course and a machinery demonstration only with the usual competitions. A dinner and dance was not recommended for this year. The report was agreed to.

Experimental Farm. This sub-committee composed of Messrs. G. W. Baker, F. C. Atkins, F. L. Filmer and S. Middlebrook reported having investigated a proposal that the MGA should, through the members, sponsor the founding of an experimental farm. The sub-committee came to the conclusion that a farm of 50,000 sq. ft. was the minimum size required for the project suggested. The committee also came to the conclusion that, for the time being, the scheme should be postponed. They wished it to be placed on record that the matter was thoroughly investigated and recommended that it should be reviewed at a future date when existing obstacles might be overcome. This was agreed to.

Research. Mr. F. C. Atkins gave a confidential report on research now being undertaken at a number of centres.

Publicity. A report on this matter and the recommendations of the sub-committee appears elsewhere.

1958 Exhibition and Conference. It was agreed that, as far as could be foreseen, the Exhibition and Conference should be resumed in full in 1958 and Bournemouth was suggested as the venue. A sub-committee is to report on the matter.

ANNUAL GENERAL MEETING

Mr. A. G. Linfield to be Guest of Honour at Luncheon

The Annual General Meeting of the Mushroom Growers' Association will take place at The Connaught Rooms, Great Queen Street, Kingsway, London (Holborn Underground Station), on Tuesday, 26th March.

The Chairman's Reception will commence at noon, followed by the Annual Luncheon at 1 p.m., and the Annual General Meeting at 2.30 p.m.

Mr. A. G. Linfield, head of Messrs. A. G. Linfield Ltd., one of the largest mushroom producers in the world, has kindly consented to be Guest of Honour and will speak on the industry in general and its future prospects.

Members, their wives, and friends—this also applies to Associate Members—will be most welcome to the Reception and the Luncheon, and Members to the A.G.M. which follows.

"LITTLE OR NO SERVICE?"

I know that Brigadier Douglas is, and always has been, a supporter of the MGA, and that he is paying a 10 guinea subscription, but I cannot agree that he is necessarily paying more than it is worth. It is, surely, an infinitesimal percentage of his annual turnover.

To deal with his suggestions as he makes them.

Firstly, it would be out of the question for the MGA to undertake any research unless the industry would pay for it. This has been tried and, mind you, when returns were very much higher, and the money was not forthcoming.

The MGA did, however, negotiate with the Ministry and obtain a very generous subsidy which enabled Yaxley to keep running for about three years longer than would otherwise have been possible.

Further, mushroom research is now more broadly based at Littlehampton than it was ever likely to be as a private venture and, as the Director revealed to us at Eastbourne in November, important investigations are going on pending the building later this year of the fine cropping houses—planned in the closest consultation with the MGA Committee.

On the question of the Lime Subsidy, it is most unfortunate that all growers cannot get this subsidy, but this subsidy was not brought in for us. We have taken up the matter, long since, but it appears that it would require an Act of Parliament to get it amended in our interests, and, so far, we have not been able to find anyone to sponsor the Bill.

The return of chips would of course be a godsend to us all, but it must be remembered that an enormous number of chips are sold in ones and twos. No wholesaler will handle any produce in returnables if he can buy a non-returnable. The charging of returnables costs the wholesaler a lot of trouble and a lot of money. I think it is for the individual grower to make his own arrangements for the return of chips. One great disadvantage to a comprehensive chip return scheme would be that it would be a perfect set-up for the dissemination of every known disease throughout the industry.

As regards Wholesalers' Commission, which is normally 7½%, we would all be very glad to see a reduction for quantity, but it is the custom of the Trade, and could only be reduced by individuals, by private arrangement.

The sale of our produce is regulated by supply and demand, and the Commission Salesman's business is subject to keen competition. So far as I can understand it, the Runciman Report has not been able to put its finger on any fundamental errors in the present system by which our produce is sold.

During the last ten years there has been a big expansion in our industry, and many newcomers who are now firmly established may, I think, have forgotten just what the MGA has done for them.

It has provided them with contacts and exchange of ideas, and I think it is fair to say that it is due to the MGA that they are in this business to-day.

If there was no MGA there would be no mushroom Publicity. Again, whilst representation could be made to the Ministry on various matters and a case stated, it is only through the NFU that actual negotiations can take place, and it is through the MGA's affiliation to the NFU that this is possible.

It was through the MGA that mushrooms were first put in their rightful place and recognised as a food. Consequently, fuel allocations were made to mushroom growers on the same scale as to glasshouse men. Those who now use oil fuel, as I do, are devoutly thankful that, so far, this vital necessity is still being delivered.

It is my fervent hope that the MGA will grow stronger year by year, and that never will the industry relapse into the dark ages which I experienced between 1930 and 1940.

Too often do I hear: "Why don't *THEY* do something about it?"

Well, who are '*THEY*'? Only a few growers who have felt the urge to get on and do something about it.

The Committee are always looking for new members who will come forward and bring energy and constructive ideas into the administration of the Association. Speaking for myself, I think I have been on the Executive too long, and at the Annual General Meeting, on 26th March, I will be more than ready to stand down and yield my seat on the Executive to Brigadier Douglas. G. P. LAWRENCE (Capt.)

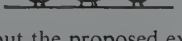
Your correspondent, Brig. A. D. G. Douglas, has fallen into the common error of assuming that high prices can ever make up for low quantities and produces an entirely arbitrary set of figures to prove his point. On the same basis of calculation it would be equally easy to show that the fewer mushrooms Brig. Douglas grows the better off he will be, since his deductions from commission agents will be less.

The price of mushrooms, in common with that of all highly perishable foodstuffs, is decided not by the grower or the salesman but by the consumer. The primary concern of any firm of commission salesmen is to distribute as much as they can, the maximum being determined by the quantity they can sell at fair market prices to ensure an adequate return for their senders, whose interests are of first importance to any reputable firm of commission agents. No salesmen could remain in business selling deliberately a few mushrooms at high prices: Brig. Douglas offers no solution for the disposal of the inevitable remainders. A. H. LEENEY.

(*Director, Worthing Fruit & Flower Co. Ltd.*)

The Blandford Brigadier complains in the February Bulletin that membership of the MGA is not worth a fiver (net). Speaking for myself, I have always been and still am an ardent if silent supporter of insurance companies, but with ever-increasing expenses and the price of mushrooms what it is, the time has come when one must indeed get value for money. Prompted by the Douglas Dialectic, I consider my insurance premiums are very high for the return I get, for I have not had a fire, had anything of value stolen, have escaped flood and tempest, and remain alive. And these companies don't even publish a bulletin, much less watch over my interests like a wet nurse. I shall cancel all policies forthwith. FRED. C. ATKINS.

In reply to D. N. Dalton who, in the January *Bulletin*, asks about the use of rectangular or triangular frames in the compost heap to avoid the " green bottom section," I for one employ this method and find it does improve composting. In my case I use rectangular frames, but there are others I know, in Kent, who use triangular frames. On farms where composting is mechanised the frames would be in the way and a handicap to quick handling. E. A. GOOK.



I found the article about the proposed expansion by Messrs. A. G. Linfield Ltd. most interesting, but I do not think it will necessarily follow that the prices will drop, although I readily agree that, where mass production is introduced, a price drop usually follows.

Taking everything into consideration this expansion may be a good thing. I do not think it will take the wind out of the sails of either the efficient or the not so efficient growers; neither do I think it will seriously halt the expansion plans of individuals.

Both the efficient and the not so efficient growers to-day have all the advice available to help them along.

I remember back in 1913 when I was at Worthing we sold the old cake spawn (16 cakes to the bushel!) and the chances then were 8-1 against producing mushrooms. It was not until my second eldest brother, Andrew, introduced a new imported method, that Worthing growers started off at full speed and, if my memory serves me rightly, it was a Mr. Laing of Lancing who grew the first batch. At about that time I used myself to make iron frames covered with roofing felt to grow mushrooms outdoors—that was around 1914-1916. No doubt these memories of mine are shared by my brother Andrew, still at Worthing.

I feel bound to say, in all honesty, that in my opinion mushroom growing to-day is far easier than it was in the older days to which I have referred.

Even we *poor* spawn makers do our very best to simplify mushroom growing by putting the best possible spawn onto the market. There is more competition amongst spawn makers these days, more

competition too amongst the growers. I say that this, and the Linfield challenge will, in the end, do nothing but good to the industry as a whole. Above all, let each and everyone of us give credit where credit is due. R. C. DARLINGTON.

STEMS AND PIECES

By **Joseph M. Michaels,** *Naperville, Illinois, U.S.A.*

11. The reason that ' Stems & Pieces ' had been omitted for several months is the proverbial ' too busy.' We have at last accomplished the hundred sundry details that go with a building of mushroom houses. Now our tray houses are completed. I'll choose not to be the tardy correspondent any longer; rather I'll try to share bits of mushroom lore that come my way. I too want to share my views and opinions with the reader on mushroom topics. He sometimes may not agree with me. And too, be they different, his views are precious to all of us, for that is the essence of a co-operative spirit.

12. I have discovered another advantage inherent in the tray system of growing. It seems to me that every time we filled a shelf house we had a decent pile of manure left over. It was costly and it was wasted. Not so with trays—we merely fill more trays until the manure is all used up. It is easy enough to stack more trays in the pasteurizing room. And in the growing room there will be a few tiers that are higher. But, you may say, the beds in a shelf house can be filled deeper! I am inclined to think that, production wise, a larger surface area for cropping will produce more mushrooms than deeper beds having a smaller surface area in the same period of time.

13. I have received two samples of spawn grown by Somycel in France. This spawn is packaged in plastic bags. The maker explains that the spawn has not been grown in a glass bottle and put afterwards in the bags. The carrier (manure in this case) is introduced, sterilized, inoculated and incubated entirely in the bag! The spawn should thus reach the grower without getting contaminated. The big danger of contamination, that is when spawn is transferred to the shipping container, is eliminated. Heaven forbid, I am not questioning the infallibility of the spawn makers in the congested mushroom growing area in South-Eastern Pennsylvania.

14. In the past, to plant two strains of spawn in the same tray has proved singularly ineffective in increasing the yield. As a matter of fact, the yield was smaller than that produced by either strain alone. There seems to be every indication that two spawns growing together are in some way antagonistic toward each other in producing mushrooms. Yet the spawn will fill the beds profusely and luxuriantly.

15. The December issue of the Bulletin published, 'A Survey of Occurrence of Tumor Inhibitors ' by Lucas and Stevens. It is rather unfortunate that the publication of the article in the Bulletin is so far

behind the work in progress. At the present time the puffball group, *Calvatia*, shows the greatest promise in elaborating tumor inhibiting substances. Incidentally, there are more than three different tumor inhibiting substances under consideration. The elaboration of these different substances is correlated to the temperature at which the mycelium is grown. Dr. Lucas tells me that temperatures above 75° are definitely detrimental in the production and yield of the inhibitors.

I have been asked by Dr. Lucas and Armour to grow the puffball for their work. I'll be glad to tell about my new venture in ' Stems and Pieces.' To start, we have a pure culture mycelium on grain. And how will we grow fruiting bodies? I hope that the gods of fungi spare us of mycorrhizal association. We will start empirically with ordinary *Psalliota* compost. But, I think, the problem is one in ecology. If we would only know what fungi in nature are associated with or present where *Calvatia* grows. To be presumptuous, if *Coprinus* were present; well, every mushroom grower knows how to get the ink caps. Is it *Torula*, or *Peziza* or perhaps a few of the actinomycetes? They have their own peculiar environmental requirements. They would serve as ' indicator ' fungi. For example whether in *Torula* or the actinomycetes will be determined by the temperature of the compost! Thus we can deduce by association, the cultural requirements to produce the puffball fruiting bodies. Of course the spawn of *Calvatia* will grow on grain. And the Difco Manual describes the ingredients of Chapek's medium and many other media that will grow the mycelium. But none of this will yield fruiting bodies. I say the problem must be an ecological one. Here is a different world open for the mushroom grower to which he could contribute his know-how and experience. I might add that the puffball is highly edible. And who knows what inroads this new vegetable could make in the mushroom industry, if we learn to grow it.

16. Last September we planted two spawns from two different spawn makers in the same house. 3,000 square feet were given to each spawn. Spawn A grew lushly and filled the beds with unusually vigorous growth very quickly. In fact the grains of Spawn A that fell on the damp floor fuzzed up to look like giant pussywillows, so strong and healthy looking was the growth. There was nothing spectacular about the vegetative vigour of Spawn B.

And how did they crop? The first flush on the lush Spawn A was ten days later than that on Spawn B. It was patchy and scattered. The flush on Spawn A (if one be so kind to the spawn maker to call it that) was an assortment of open veils, woody mushrooms and pinheads that would not mature. There were some spots with nice mushrooms, and there were a few beautifully formed large mushrooms appearing at random on the beds. This kind of thrashy production continued on Spawn A until the end of the crop. Toward the end of the crop the open veils disappeared. Those beds that yielded open veils and woody mushrooms in the beginning just refused to grow any kind of mushrooms later. Spawn B on the other hand produced break after break of excellent mushrooms that filled the beds out completely each time.

The total production for the house was an even two pounds per sq. ft., in three months cropping. Almost the entire load was carried by Spawn B.

Spawn makers tell that they all run into open veils, and woody mushrooms. The maker of Spawn A gave us open veils the previous season too.

Are open veils and woody mushrooms a genetic defect? Could it be that the genetic mechanics that determine the morphology and the physiology of the fruiting bodies is destroyed or ceases to be functional because of continous subculturing of the mycelium in the spawn makers laboratory? Is it possible that the vegetative mycelium ceases to differentiate itself into a good reproductive mycelium (without open veils) when the culture gets too old? There is no doubt a multiplicity of causes for this spawn defect. Among these does the spawn maker let his culture get old through neglect?

Mr. Paul Swanson who passed away recently at 85 and who was a pioneer mushroom grower in this area once told us that when spawn sources were unreliable in the old days he would grow spawn on manure in special trays, and the spawn from such a tray would be used over and over again to inoculate new beds, while additional composted manure was added to the trays to keep the culture going. This would tide the grower over from crop to crop.

And he said—eventually open veils and woody mushrooms resulted, and the grower would look for a new spawn. Paul Swanson was a very practical man, and a friend of Dr. Duggar. He was probably the first man to use the expression ' woody mushrooms.' Mr. Swanson's observation as to when open veils will develop in a mushroom house is probably correct.

Recently a spawn maker told a grower in this area that he thought that the grower had ' Mummy ' Disease in explaining the woody mushrooms on his spawn. And, I have heard spawn makers say—it didn't happen to other growers who used our spawn. Therefore you should consider possible mistakes that you could have made in perhaps composting or in sanitation, or in watering, or in ventilation. Of course the grower is not infallible, and he takes well to such an ear-beating. But to the spawn maker I quote Harry Overstreet's expression: " We impute unto others that which is rankling in ourselves."

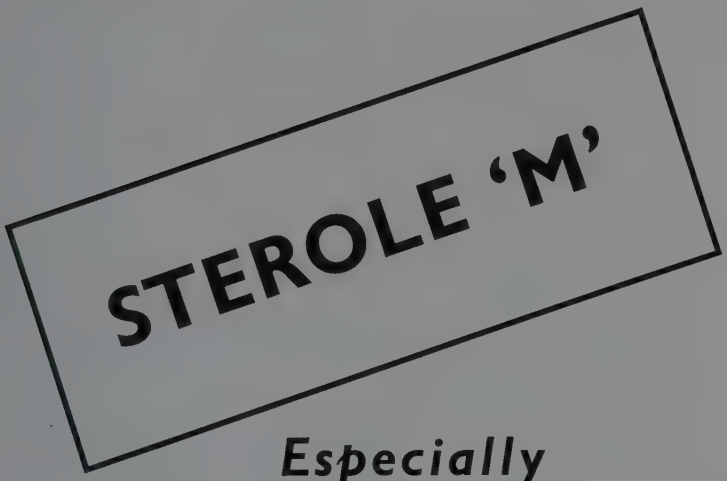
If there are a number of causes that predispose a mushroom crop to fruit defectively (open veils, etc.), the fact remains that the spawn is the vector that brings this trouble into the mushroom house. Witness again Spawn A and Spawn B.

Will the spawn maker betray the trust that is bequeathed him? I am sure that he has a better perspective.

WELL, I NEVER!

A grower was being told by a layman that he should increase the efficiency of his farm and sited the usual method of picking as an example for improvement. The grower in all modesty replied, " I've got over that, I bury wire netting under the casing and when the mushrooms are ready, I give it a sharp pull and cut all the stalks off at one go."

IVOR HEWETT.



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MUSHROOM SPAWN

171. We have now started using 1956 straw—and what a straw! A "synthetic" is being prepared in two halves—one half 1955 straw, the other 1956. After the usual wetting up and chopping—double chopping for the stronger 1955 straw—and with activators added only this morning, the 1956 straw has the dark colour and weak texture of fully prepared synthetic compost. The 1955 straw on the other hand is still bright yellow and despite the double chopping still strong. A lot of theories go by the board if this weak, rotton, sooty, almost-pulp 1956 straw produces a crop, especially as we've not yet produced a really good "synthetic" crop from a *good* straw . . . . . the masters of synthetic won't give me their secret!

172. In order to combat our "brown" trouble, which may or may not be linked up with spawn but which undoubtedly is gathering momentum in the country, we are putting peat on in a much drier state than usual. The result is some reduction of the trouble, which patently likes moisture, and a partial collapse of quality with an appreciable loss of total weight. The moral would seem to be: Use wet peat to get heavy crops and take a risk on the "browns."

173. The older we grow the more we realise the dangers that lie in our dependence on spawn makers. In many cases of poor "runs" and poor crops generally the grower, assuming his spawn to be a safe and reliable factor, has blamed his compost, his methods, his conditions and himself. For years he's done this while the "infallible" spawn maker has encouraged him in that belief. But now, in late January, 1957, this "growers' incompetence" bubble has been burst wide open. First, a batch of poor-looking damp grain arrived on my place and was by a lucky chance seen by another grower who happened to be visiting me. It was planted and immediately practically all of it turned green and failed. Later I heard of another grower having the same trouble. Then another. And still another. And now comes word of a grower who has lost 10,000 sq. ft. of trays because of this bad spawn. His tight schedule doesn't permit him to re-spawn. He is a little angry. Aren't we all? There are probably some other growers in the same predicament and perhaps still blaming themselves. This is the point I'm trying to make: adding the present catastrophe to the experiences of the past, especially those which have shown an infinite variety of growth from one batch of cartons planted in a long run of continuous bed, we can now reasonably say that despite variability of composts and management spawn is probably the most unreliable factor in the whole of our business—and we have no control over it. I say all this with little fear of contradictory proof. What's the answer? Well, one or two people have seen the light . . . . . .

174. By kind permission of the C.N. Oil Burner Co., 18 Rudolph Road, Bushey, Herts., we are about to try out their AUTOVENT air movement system. Briefly this consists of a fan pushing air through very lightweight thermoplastic ducting, appropriately holed at intervals along the ducted length for passage of air. The outfit is alleged to move 10,000 cu. ft. of air per hour, and the ducting which weighs only 1 lb.

per 50 ft. length can easily be hung from the roof. The unit is normally supplied as a 4 k.w. blower/heater, and can be thermostatically controlled. The cost is around £49. It may be obtained without the heater for £41. My hope is to improve both quality and quantity by better distribution of air, movement of toxic gases, and so on. But I'm keeping an open mind about it.

175. Dr. Storey, visiting several farms where "brown"-diseased mushrooms have been reported, discovered that all mushrooms in close association with the " browns " have some sort of cell breakdown which causes areas in the caps and particularly stems to appear waterlogged. He later discovered, much to my consternation, that ALL the mushrooms on my place had signs of this " water-stem," as he aptly calls it, even in areas where cropping was exceptionally good and the fruit apparently perfect. There is a tentative explanation of this trouble but I'd better leave it for something more definite later—if anything more satisfactory turns up. I'm likely to get into enough hot water with other paragraphs this month without putting up the pressure on this item.

176. In some multi-bay casing tests various media were used one above the other—½" layers of each, two media to each test, making 1" total depth. In one of these several areas were cased with ½" ground lime neat on the compost and ½" of our normal local peat on top. Throughout the crop it was impossible to see any mycelium in the lime but the peat was full and mushrooms grew, with however a low average for the group of under 1 lb. In another case unlimed peat was used under a normal limed peat layer. Here again the lower layer was completely devoid of mycelium apparently, being quite black, while the top half was chock full of white growth. Indeed in both cases we could peel off the upper layers to reveal the seemingly useless layers below. One wouldn't expect to see white mycelium in white lime, but surely one would in black peat. It's too fantastic to suppose the spawn could have jumped the gap, and yet . . . . . ?

177. In case anyone thinks we're a lazy lot of people here at Brayton, let me remind you that our experimental fanaticism continues with great vigour. We have at the moment no less than 15 major experiments on hand. Some of them are duplicated in several houses, and all are commercial-scale. They include such trials as the following: sterilized v. unsterilized peat; peat used wet v. dry; compost overlay after spawning, with control; 4-day compost, with control; spawning on turned over compost, with control; prolonged peak heat, with control of same compost in adjacent house; synthetic compost v. stable manure; compost by Hawkomatic v. compost by D.L.P.; a repeat of the peat-layer tests mentioned elsewhere (in replicate tests and in large commercial areas). You won't expect me to explain the whys and wherefores of all these or to give any detailed results later. I merely mention them to show that we're not asleep up here, contrary to the general impression.

178. A small mushroom farm was recently offered for sale near here. The following appeared in the printed description: " The two sheds hold 204 boxes and the arrangement is 3 lb. per sq. ft."

WORLD'S PRESS DIGEST

Scientists and engineers of the London County Council are examining plans which could lead eventually, if extended to the rest of Britain, to a production of some hundred thousand tons of sulphur a year by the action of sulphate-reducing bacteria in sewage sludge . . . . . Full-scale plant at Beckton alone would be capable of producing at least 10,000 tons of sulphur a year; this would mean the utilization of all the sewage sludge available. *Sunday Times*, Jan. 27/57.

An anti-mould paint for the brewing and dairying industries, developed on the Continent, said to eliminate mould growth on walls and ceilings completely, is now being made under licence by Clariloid Chemical Co. Ltd., Wells, Somerset. Unaffected by steam and condensation, paint is odourless and non-toxic. Known as Prevenit Anti-Mould Paint, price is 25s. per gallon. *Scope*, Feb./57.

Waterproofing system for roofing which, it is claimed, offers complete weather protection at low cost has been developed by Evode Ltd., Stafford. Light, per yard super, the system uses a bituminous insulating paste, reinforced with a fabric membrane sandwiched between two layers of paste, giving an elastic skin. Treatment is applied cold to existing roof surfaces. *Scope*, Feb./57.

Exceptionally low price is claimed for a new arc welding set made by Ferrous Products (Croydon) Ltd., Church Road, Croydon, Surrey. A portable transformer weighing 80 lb. plugs into 190/240v. mains and costs £23 10s. complete with set of special cables and welder's equipment. *Scope*, Feb./57.

From observations and experimental work which we have carried out on a number of fungi we now wish to indicate how this group of organisms may well be particularly favourable for elucidating certain aspects of the problem of cancerous neoplasms in animals. . . . . Cytological investigations so far have been largely confined to the cultivated mushroom, where comparisons between cell behaviour in normal and tumour tissue have been made . . . . . With some substances (volatile mineral oils and coal-tar products), tumourous malformations (Rose-comb) were repeatedly induced . . . . . Unlike the surrounding normal tissue, the tumours are composed of two kinds of cells, both of which contain actively dividing nuclei: (1) small, non-vacuolated, multinucleate cells, with markedly basophilic cytoplasm; (ii) larger vacuolated, multinucleate cells showing less basophily of the cytoplasm. In addition, intergrades between these two cell types are found . . . . . Certain cytological disturbances (detailed in the paper) are all characteristic of cells in animal tumours . . . . . Our investigations have been made possible by a grant from the British Empire Cancer Campaign.

Prof. P. T. Thomas, Dr. H. J. Evans and D. T. Hughes: " Chemically Induced Neoplasms in Fungi." *Nature*, Nov. 3/56.

Cedarville, New Jersey, was the scene of a vacuum-cooling demonstration held for the benefit of mushroom growers who were interested in possible applications of the technique in marketing fresh mushrooms . . . . . Mr. C. A. Ferguson, of the Automatic Steam Company of Philadelphia, predicted that the quality and appearance of fresh mushrooms could be maintained much better after vacuum cooling. He explained that by reducing the internal temperatures of mushrooms from around 60° F. to 34° F. in only 15 minutes, the chemical and physical changes that are responsible for quality deterioration would be minimised. The actual weight loss with mushrooms would amount to only 2½ pounds per 100 pounds of mushrooms . . . . . Results of the initial test, although not conclusive, do justify more extensive study. *AMI News*, Dec./56.

Research in the Department of Physiology, University of Cairo, reveal that the thyrotrophic hormone content of the blood is higher during the winter than during the summer, both in male and female dogs. The level of gonadotrophic hormone in the blood tends to rise during the summer as compared with the winter level. *Nature*, Jan. 12/57.

The younger generation (in California) definitely prefer processed food . . . . . You have been warned. *Grower*, Jan. 26/57.

" Silvestos " is an insulation coating produced by blowing on specially prepared asbestos fibres in atomised water. Application is carried out *in situ* by approved operators using special machines manufactured by Sprayed Insulations Ltd., of 5 Fenchurch Street, London, E.C.3 . . . . . It produces a continuous low thermal conductivity insulation which is completely incombustible and rot-proof.

Digest of Equipment, Jan./57.

A plot of ground was marked out in a Lincolnshire potato field very badly infected with potato root eelworm. Strips running the length of the plot were treated in four different ways—predacious fungi with FYM, fungus without manure, dung without fungus, and a control where neither dung nor fungus was given. The result of this trial was dramatic. On the (two) strips where no dung had been used the crop failed completely. Where dung had been used without the addition of fungus, severe eelworm damage occurred, and a crop of only four tons to the acre was taken. Where dung was used in conjunction with fungus, however, the crop appeared perfectly healthy and yielded over ten tons to the acre, in spite of the presence of eelworm cysts on the roots of the potato plants. Dr. C. L. Duddington in *Grower*, Jan. 26/57.

(Dr. Alfred Dieter's Study of eelworms in mushroom beds was briefly reported in the Feb. Digest). Observations were made in cellars, apparently on ridge beds. Pasteurization is not mentioned, and was probably not carried out. Dieter concludes that a density of 8,000 to 10,000 eelworms per **litre** of bed material seriously impairs production. On Farm A, with an average yield of 5 kg./m., crops varied between 5·25 (in a new cellar, with 3,890 eelworms per litre of bed material), 4·65 (6,307 eelworms), 4·50 (8,680 eelworms), and 2·40 (in an old cellar, with 17,700 eelworms). On Farm B, the top layer of bed material contained 46,750 eelworms and the bottom layer 15,230 before coming into crop; during cropping the respective counts were 41,760 (top) and 60,630 (bottom); and at the end of production 26,110 and 82,420 respectively. On Farm C the counts were 1,020 eelworms in the manure before composting, 352 in the casing soil, 1,430 in the " bed material " eight days after casing, 21,040 shortly before cropping (two months after spawning?) 16,204 after one week's picking and 38,820 after five week's picking.

Dr. A. Dieter in *German Horticulture*, June, 3/56.

The first Mushroom Industry Short Course in the United States last year was so successful that a second is being planned for this year; and the provisional dates are 24th—27th June. *Nurseryman & Seedsman*, Jan. 24/57.

In the early autumn of last year, mushrooms on several farms first went off colour, often in the centre of a clump, and turned a dull brown. And in a slowly expanding circle their neighbours inevitably succumbed in a soft rot. In La France Disease these brown mushrooms have " no foul smell." In the outbreaks I have been visiting recently they very definitely stink.

Fred. C. Atkins in *Nurseryman & Seedsmen*, Jan. 24/57.

There are already signs of a return of the Cecid, and I am getting anxious for April. Fred. C. Atkins in *Nurseryman & Seedsman*, Jan. 24/57.

The American Rayturn Corporation has developed an electric soil moisture measurement system called Irrigage. It relies on a resistance meter and gypsum as a buffering agent. *Grower*, Jan. 19/57.

Two brothers from England (Roy and Derrick Groom, partners in Irish Nurseries, near Dublin) have just finished building eight mushroom houses which must be among the most modern in the world. They are built from hollow blocks and insulated with a mixture of vermiculite and cement spread over walls and roof. Each shed is thermostatically controlled, and ventilation is regulated by a device which governs the flow of air from the high roof. Manure is stacked on Thursday, gypsum being added as it is unloaded. It is turned on Monday and given another turning as the trays are filled on Wednesday. In the two heating sheds the temperature is kept between 130 and 140 degrees F. for two days. They find " short composting by the Sinden method much more convenient than the old 21-day process." The nursery has gone over entirely to grain spawn but they " have noticed that, unlike the manure spawn, it seems to throw small mushrooms in the second flush."

H. G. Schaffer in *Grower*, Jan. 12/57.

Fluorine, which is said to protect the teeth, is being put into tap water in a number of areas. Little is known about the effect of fluorine-treated water on growing crops. The horticulture group of the Agricultural Improvement Council is being asked to investigate. *Grower*, Jan. 12/57.

A new, small, light and, most important, inexpensive air compressor is now being marketed by Genner Engineering Ltd., of London. Called the Mini-Compressor, it sells at £13 5s. It may find plenty of uses in the horticultural industry, particularly with mushroom growers. *Commercial Grower*, Feb. 8/57.

References:

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B. & G. Review, 27 St. James Street, Covent Garden Market, London, W.C.2.
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Digest of Equipment, 3 Cranston Drive, East Didsbury, Manchester 20.
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Produce Packaging, Agriculture House, Knightsbridge, London, S.W.1.
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If the journals referred to are generally available, they are most easily obtained by placing an order with your bookseller or stationer.

JUST OUT

An exceptionally well produced and an informative little booklet, " Prepackaging Fresh Fruit and Vegetables " gives a good idea of the progress being made on the expanding front of prepacks and deals, among other things, with the guidance of Packhouses, the types of cartons, trays, forms and moulds in use, paper products, transparent flexible films, net and mesh bags, outer containers, closures, refrigeration, ventilation, with charts, recommended packs, recommended quantities, of home and imported fruits and vegetables, etc.

Mushrooms have but a small place in this useful guide and the booklet suggests $\frac{1}{4}$ inch of stalk for prepacked mushrooms (against the Ministry's recommended $\frac{3}{4}$ inch for buttons and 1 inch for cups and opens through the usual marketing channels). The book lists buttons or cups only for prepacks and a storage temperature of 35—45° F. It is obtainable from The Produce Prepackaging Development Association Ltd., Agriculture House, Knightsbridge S.W.1 and costs 5/-.

REPLIES PLEASE!

Did you receive that request enclosed with the January Bulletin, asking for information about your consignments of mushrooms and asking specifically for the names of your Salesmen? Did you fill in the slip of paper provided for replies and did you use the special pre-paid envelope provided? If you did these things, disregard this appeal, but if you are one of the 50% who so far have not replied, please do so as quickly as possible. The information sought is of the greatest possible importance to the Publicity Sub-committee.

pC, pF, pH

By Dr. R. L. EDWARDS

These pX symbols threaten to follow the vitamins through most of the alphabet, and like the vitamins they are important, but in this case for healthy plant life, which includes the mushroom. It may therefore interest readers of the Bulletin to have them explained.

pH is the oldest of the three, and is used to indicate the *effective acidity* of a solution. This is not the same as the concentration of any one acid or of total acids in the solution. To understand the difference it must be explained that all acids are acid because they split up when they are dissolved in water into (*a*) hydrogen atoms with a positive electric charge (hydrogen ions) and (*b*) the rest of the acid with a negative charge. The degree to which different acids split up in this way varies greatly. Thus hydrochloric acid is described as a strong acid because in dilute solution (e.g., 1%) it is nearly all split up and 100 units of acid give over 90 units of hydrogen ions, whereas acetic acid is a weak acid and a similar solution would contain less than half as many hydrogen ions. The unsplit remainder of the acid is still there and if any of the hydrogen ions are removed, some more of the acid splits up to replace the lost ions, and so on to maintain the effective acidity. pH is a measure of the concentration of free hydrogen ions, or in other words of effective acidity of a solution. Unfortunately it is not a straightforward measure. For reasons too complicated to discuss here it works in the opposite direction: high acidity=low pH, and low acidity=high pH. Also the scale is logarithmic;

pH 2 means ten times as many hydrogen ions as pH 3.
pH 3 ten times as many as pH 4.
pH 2 100 times as many as pH 4.
and so on from pH 1 to pH 14.

pH 7 is the pH of pure water and is described as neutral, lower pH's are described as acid, higher ones are alkaline (although they still contain very small numbers of hydrogen ions) on the same decreasing logarithmic scale.

Alkaline or basic substances such as lime, ammonia and soda raise the pH by neutralising and so removing hydrogen ions.

There is a further complication in the effect of " buffers." These are substances which have the property of " mopping up " free hydrogen ions. Common salt (sodium chloride, pH in solution about 7) is not a buffer, and adding it to a solution of pure acid of pH 3 has no appreciable effect on the pH. Gelatin and neutral sodium phosphate (with pH in solution of 7) if added in suitable quantity would raise the pH to 4 or more. Conversely much more acid is required to alter the pH in presence of a buffer. Only a very small trace of acid is needed to change the pH of pure water from 7 to 6. In presence of a buffer, ten times as much would be needed.

MOUNT MUSHROOM SPAWN

Washington,
Pulborough, Sussex.

J. E. R. Simons Ltd.,
Harlow,
Essex.

23rd Feb., 1957.

Dear Sirs,

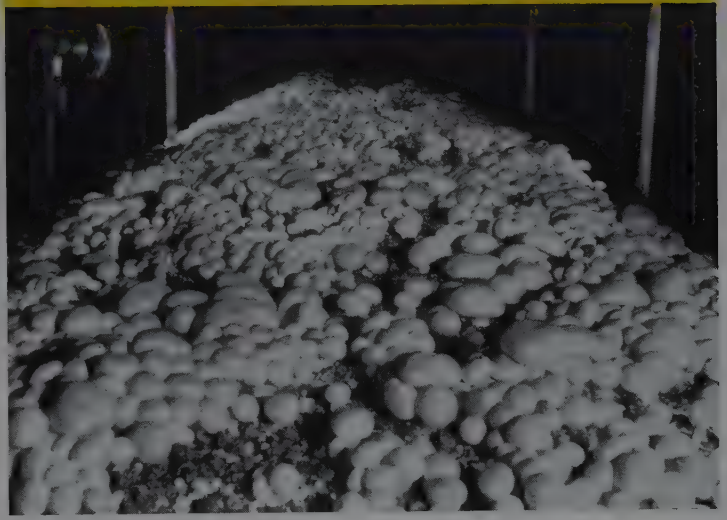
I have great pleasure in sending you this photograph of mushrooms. The spawn is Mount Enve (Grain). It is a first flush, and produced 1 lb. per square foot in seven days. Since then the second flush produced 2/3 and the third flush which is now on looks just as promising. But this is not my first crop that has done so well as this; I have had many which have given me 3 pounds per square foot—and 4 pounds on outdoor ridge beds—all with Mount Enve. My father, Ernest Lee, of Broadwater Lane Nurseries, Copsale, Horsham, has, as you most probably know, the same results.

My compliments to you for producing this strain of spawn.

Yours sincerely,

Cecil Lee.

RELY ON —— THE BEST



MOUNT PURE CULTURE
MUSHROOM SPAWN

Distributors : J. E. R. SIMONS LTD., HARLOW, Essex
PHONES : POTTER STREET 65, 222 & 223 GRAMS : SIMONS, HARLOW

In mushroom growing, manure and compost are quite good buffers. The quantity of ammonia which in practice raises the pH to, say, 8·5, would if dissolved in water take it to 10 or 11. Peat is well buffered and so needs a lot of lime to raise its pH to 7 or more.

The importance of pH lies in the fact that plants and animals in general do not mind how much unsplit acid is present in their tissue or surrounding fluids, but they are much more sensitive to the concentration of hydrogen ions.

I am often asked what is the pH of gypsum, hydrated lime, carbonate of lime, etc. The answer is that they have no pH until they are dissolved in water, and then the pH depends on the strength of the solution and on any other substances present. By the definition of pH, only a solution can have a pH value.

pF. This term was introduced by workers at Rothamsted to express a new concept of the ease of availability of water—in their case to plants. Like pH it is a logarithmic scale, but it seems a bit more logical as it indicates directly the degree of suction needed to draw water from a soil or other similar medium. Thus it is a measure of the effort required for plants (or mushrooms) to take up water from the soil.

pF is measured with an apparatus in which a steady suction can be applied to a sample of soil until no more water is drawn out. At the same time a column of water is drawn up a tube and the pF is the logarithm of the height of this column of water, measured in centimetres.

Research on soil and peat casings at Yaxley showed that the pF should not be too high, i.e., water must be easily available from the casing. It is possible that pF in the compost also matters but as far as I know this has never been investigated.

pC. Some years ago it was observed that some glasshouse soils were becoming over-loaded with soluble salts as a result of the heavy dressings of fertilisers applied year after year. This concentration of soluble salts, which are dissolved in the soil water, is conveniently measured by measuring the electrical resistance of the soil, and pC is the logarithm of this resistance in standard units.

The significance of pC for mushrooms was only announced a few months ago and it is too soon to expect much definite information.

Low values indicate high concentrations of dissolved salts and are harmful to growth.

All soluble salts help to reduce this resistance, e.g., the soluble part of fertilisers. Other soluble substances such as sugars do not affect the pC value, though they would increase the injury to plant or fungal life in excessive amounts. Fortunately they do not normally occur in soils.

Common salt solutions strong enough to have a preservative effect have very low pC values.

All three of these values, pC, pF, and pH vitally effect all living organisms and we must welcome more precise knowledge of them.

The CULVERWELL *Manure Turner*

FOR MUSHROOM GROWERS

PETROL *or* ELECTRIC

EXTREMELY MOBILE

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The small machine with the BIG turnover

Bruises and aerates–does not shred. CAN BE USED FOR ALL TURNINGS. 3 men handle 25 50 tons per day. Waters as it turns. Stacks up to 5 feet. By using the CULVERWELL MANURE TURNER throughout the whole composting process, the work is reduced to the minimum, time taken is shorter with improved results.

Will pass through a door 2' 10" × 5' 10" with the detachable wheels removed

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DO NOT WORRY

says J. E. ADY

In the February Bulletin, No. 86, the Editorial " Face the Facts " and the article, entitled: "7½ Million lb. Per Year" have flushed me into the open. I refer, in particular, to such statements as:—"A bombshell to producers," Additional 2½ million lb. represents " an overall increase in the total U.K. production of 16%," "A real and live threat " and " It may well mean a drop in price."

It is my impression that such statements, may well cause unnecessary alarm and despondency amongst some U.K. growers, and I hope that what I have to say, will help to reduce this alarm to its correct proportion.

Messrs. A. G. Linfield Ltd., have taken the natural and not unusual step of increasing production. It is a businesslike step to be expected from such a well run company. After all, one does not have to look far amongst some of the smaller growers to find several who have increased production by 100% and more in less than five years.

The point about Messrs. Linfield that was really worth magnifying was overlooked; I refer to their annual production record of 10 lb. per sq. ft. I doubt if there is another grower to better it.

Going back to this question of increased production and recognising it as a normal and natural event, where is the bombshell?

The statement that the " increase of up to 2½ million lb. represents an overall increase of about 16% " is, of course, inaccurate, but may have misled some who did not see the error at a glance. There is a big difference between 16% and 6¼%, and 6¼% it is!

In 1951 the U.K. production was estimated at 25 million lb., and in 1956 at 40 million lb., an increase of 60% in five years. One might say that the output is increasing by around 10% annually. This 10% production increase has not meant an average annual price decrease. On the contrary, even before the publicity scheme came into being, the average price has been just that shade higher each year, indicating that demand is a jump ahead of supply.

If demand and supply remained constant and did not progress, but only one grower progressed, one might then consider that a real and live threat. But we know that both supply and demand are increasing, and that includes the case in question. Can anyone really believe that a mere 6¼% increase in overall production could constitute a real and live threat or a drop in price when a 10% increase has been showing a rise in price?

If production and demand stood still and someone produced an extra 6¼%, only then might one expect up to a 6¼% fall in price to balance, and no more. But it is known that demand was increasing about 10% annually before our publicity drive came into being, and should improve still further with the aid of publicity. On what basis, therefore, might one expect a fall in price?

PUBLICITY IN AMERICA

The above rather striking picture, is one of the publicity aids used by growers in the U.S.A. It is reproduced by courtesy of the *A.M.I. News*. The Editor wishes to make it quite clear that this picture is not intended as a reply to Mr. Ady's "lack of of bouyancy" charge on page 96.

All will agree that the world and everything in it progresses. Production of many commodities in the past 20 years or so has increased many hundreds per cent.; prices too have increased likewise. With progressive supply, demand, wages and the like, why should anyone expect mushroom prices alone to go counter to the universal trend?

This is a mild protest against negative and defeatist thinking in the Bulletin which I, from time to time detect, but in which thinking, I am glad to say, the majority of growers do not indulge. As it is, the industry is progressive, the demand progressive, the output progressive; so why any alarm if Messrs. A. G. Linfield Ltd., too, are progressive?

To my personal knowledge, a substantial grower resigned from the Association for the very reason that he felt that some of the subject matter in the Bulletin lacked vision, encouragement and buoyancy.

Finally, let me again quote the Editorial, "A challenge . . . . . that can and will be met." That is surely the right note. J. E. ADY.

Fred. C. Atkins comments:

Personally, I found nothing depressing in the February editorial except the arithmetic, and one did not have to be a mathematician to realise at once that $7\frac{1}{2}$ million pounds represented 16% of the total estimated production in this country. The consequential drop in price was an expression of opinion which many share; and it was surely the duty of the MGA to bring this possibility to the notice of its members?

Maybe the news caused alarm and despondency; despondency would be ridiculous at to-day's prices, and alarm would be valuable if it stimulated action to reduce costs and/or increase yields. What I consider would have been absolutely criminal would have been to encourage members to sit back under the impression that a sudden, dramatic jump in supplies to the markets would have no effect.

If, as Ady contends, prices were rising steadily I might be happier in his philosophy. But costs continue to rise, and my own records reveal that, apart from 1953, the annual average price during the past three years has been rock-steady at the lowest level since 1940.

I am not alone in the belief that any price increase now would be a bad thing for all of us, for it could only be momentary and the net result would be buyer-resistance and reduced consumption.

As an aside, since he has pointed out the Editor's weakness in maths., I suggest Ady checks up on his statement that if production went up $6\frac{1}{4}$% and demand stood still, prices would fall by $6\frac{1}{4}$%. I think he will find the correct fall would be 5·9%.

But this is quibbling, and space is limited. What I beg of our critic is a fresh letter dealing more precisely with a matter he introduces which has little to do with the Linfield expansion, *i.e.*, that years ago one un-named grower resigned from the MGA because he felt the Bulletin lacked vision, encouragement and buoyancy. And let him explain just what " buoyancy " means in this context. The Editorial Board welcomes constructive criticism at all times and, if its policy loses members, the Board should be replaced. The Bulletin exists for members, not for the Board.

AMBITIOUS PUBLICITY PLANS FOR 1957

The most ambitious plan to date for the promotion of more and more mushroom sales was placed before the MGA Executive Committee when that committee met on 20th February.

Outlining the plan, Mr. G. V. Allen, Chairman of the Publicity sub-committee said, that a scheme whereby the Association could be associated with the promotion of paper bag sales, such bags to carry mushroom publicity, had been carefully investigated and the sub-committee now requested permission to go fully ahead with a modest pilot scheme in the South of England. If such a scheme proved successful the committee already planned to extend it immediately to the North of England and later to various other parts of the country. By this scheme it was possible to cover the whole of the country.

A long discussion followed and eventually the Executive Committee gave the go-ahead, pointing out to the Publicity sub-committee that the design of the publicity material to be printed on the bags, and the general attractiveness of the bags themselves, was of particular importance.

The Publicity sub-committee was also given permission to go forward with plans to co-operate with the Gas Council in a one week's mushroom publicity effort at the Tea Centre in Lower Regent Street, London, in a publicity campaign in conjunction with Radiation Ltd., in which the celebrated chef, M. Jean Conil, would be giving demonstrations and which, it was hoped, would be repeated in various other centres in the country and finally, the Executive Committee approved of provisional plans to stage a mushroom pre-pack display at the Royal Agricultural Show at Norwich later this year.

PHORACIDE, MALATHION, LINDANE, ETC.

The attention of the Editor has been called to some advertising matter which, in *Bulletin No. 85* claimed that Diazinon, Parathion, Malathion, Lindane, Nicotine Sulphate, etc., did not give satisfactory control against the Phorid Fly. The Editor would like to make it quite clear that the opinions expressed in the *Bulletin*, either through advertising or otherwise are not necessarily those held by the Editorial Board or the Editor.

Phoracide. In reply to some enquiries the Phoracide formula is:— Active ingredients 95% (0,0 dimethyl 2,2 dichloro vinyl phosphate 10%; *Chlorinated polyphenyls 40%; Aromatic petroleum distillate 45%), Inert ingredients 5%, all percentages by weight.

*57% Chlorine

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JANUARY CONTRIBUTIONS

Salesmen:—	£	s.	d.
Francis Nicholls Ltd., Smithfield Market, Birmingham	157	10	0
T. J. Poupart Ltd., Covent Garden, London, W.C.	100	0	0
Wm. Artindale & Son Ltd., Castlefolds Market, Sheffield	21	0	9
Geo. Jackson & Co. Ltd., Smithfield Market, Birmingham	5	5	0
A. E. Phippen (Brentford) Ltd., Brentford	5	5	0
C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield	3	3	0
Marks & Co. Ltd., Covent Garden, London, W.C.	1	1	0

***Spawn Makers/Merchants:—**
H. Mount & Sons Ltd., Littlebourne, Canterbury.
W. Darlington & Sons Ltd., Southcourt Road, Worthing.
Monlough Food Production Co. Ltd., Ballygowan, Belfast.

FEBRUARY CONTRIBUTIONS (to 25th February)

Salesmen:—	£	s.	d.
R. E. Jenkinson Ltd., Covent Garden Market, W.C.2..	105	0	0
Dan Wuille & Co. Ltd., Covent Garden Market, W.C.2	50	0	0
J. Collingridge Ltd., Covent Garden Market, W.C.2	25	0	0
Ed. H. Lewis & Sons Ltd., Covent Garden Market, W.C.2	5	5	0
†C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield	4	8	3

***Spawn Maker/Merchants:—**
Monlough Food Production Co. Ltd., Ballygowan, Belfast.
S. A. F. Sampson Ltd., Oving, Chichester.

Sundriesmen, etc.:—			
Shirley Organics Ltd., Vicarage Wharf, Battersea, S.W.11	25	0	0

*Amounts collected by Spawn Merchants are not for publication.
†Previous contributions already acknowledged.

Send your Contributions to :—

THE SECRETARY,
MGA, AGRICULTURE HOUSE
KNIGHTSBRIDGE, LONDON, S.W.1

AREA REPRESENTATION—POSTAL VOTING

Something of a revolutionary reform in the election of members of the MGA Executive Committee is to be placed before the Annual Meeting of the Association at the Connaught Rooms, London, on Tuesday, 26th March.

Area Representation and Postal Voting are both to be urged by the Executive Committee and the meeting will be asked to approve these recommendations, which are subject to the over-riding rules of the National Farmers' Union.

As will be seen from the map opposite, the Executive Committee suggest that the United Kingdom should be divided into seven different

South Eastern Area A	
Kent	25
Surrey	16
Sussex	39
London	3
Middlesex	2
	85

Eastern Area B	
Essex	17
Herts.	10
Suffolk	3
Cambs.	2
Norfolk	3
	35

Midlands Area C	
Bucks.	4
Beds.	1
Oxon.	3
Northants.	5
Warwicks.	1
Lincs.	2
Notts.	5
Leics.	1
Derby.	1
Rutlands	1
Staffs.	6
Hunts.	—
	30

N'th Eastern Area D	
Yorkshire	27
Northumberland	—
Cumberland	1
Westmorland	—
Co. Durham	2
	—
	30

Western Area E	
Lancs.	19
Cheshire	2
Shropshire	5
Wales	3
Worcs.	1
Herefordshire	2
Monmouthshire	—
	—
	32

S'th Western Area F	
Glos.	4
Wilts.	2
Hants.	10
Dorset	3
Somerset	3
Devon	5
Cornwall	—
Berks.	9
	36

Scotland & N'thern Ireland G	
Isle of Man	1
N. Ireland	8
Scotland	15
	24

areas and, with the committee consisting of 15 members, nine members should, over the course of the next three years, be elected by the various areas and the remaining six to be elected by general election from all areas. In every case postal voting will be employed after this year.

The Executive Committee point out that voting in these elections is restricted to full Grower Members of the MGA.

It is to be proposed that members of the Committee should be allowed to serve two terms of three years only and to become eligible for re-election only after one year's absence on the completion of six year's service.

The Area Committee sub-committee (Messrs. G. W. Baker, G. V. Allen and A. G. Pointing) reported on the proposed areas and the proposed formation of area committees. It was agreed that area committees should be encouraged to function wherever possible, but the formation of such committees was to be left to the areas concerned.

"YOU CAN'T KEEP A GOOD SPAWN DOWN"

PINKERTON'S PROLIFIC

PURE CULTURE SPAWN

February, 1957.

Dear Sir,

We at Shirley Organics Limited try to do our business in a friendly manner and value very highly the good relations we have with so very many mushroom growers. It is only natural that we have great faith in Shirley products and the continually increasing tonnage of SHIRLEY ACTIVATOR M used is most gratifying.

However, it is very nice to hear from growers who, when passing their orders, express their own faith in it. In the course of two posts four well known growers expressed themselves as follows :—

User for over two years states . . . "I shall never again compost without Shirley" . . .

User for 2½ years states . . . "I am at no small pains to assert with every confidence which I consider the best and can assure you that as long as I use Activators Shirley M is my choice" . . .

User for over two years states . . . "If you had only one customer left it would be me" . . .

User for nearly two years states . . . "After every conceivable test and comparison I use Shirley M in every compost" . . .

These were entirely unsolicited and we think are especially nice as all have had long experience of the use of SHIRLEY ACTIVATOR M. Many thanks ! We really appreciate your kind words.

SOLE MANUFACTURERS :

SHIRLEY ORGANICS LIMITED

VICARAGE WHARF

BATTERSEA - LONDON - S.W.11

TEL. BATTERSEA 1013/4/5/6

Also available from all the Depots of Messrs. Geo. Monro Ltd.

PHORACIDE*

The new insecticide for mushroom insects

Now thoroughly tested and in use in mushroom houses for one year

PHORACIDE HAS DONE A WONDERFUL JOB IN CONTROLLING FLIES AND GNATS FOR CALIFORNIA MUSHROOM GROWERS

Read what California growers say about PHORACIDE:

Nick Masciantonio of San Jose (formerly of Penna., and Syracuse, N.Y.) was amazed how quickly he got results with PHORACIDE. " I'm going to tell my cousin and brother-in-law in Penna., how good Phoracide is."

L. D. Mathew of Santa Cruz tried everything, but obtained control only with PHORACIDE. After spraying PHORACIDE he swept several inches of gnats out of the walks.

Peter Kerrigan of Aptos bought a Fly Trap and saw for himself the heavy catch of flies before spraying with PHORACIDE. But after using PHORACIDE, " not a blinking gnat."

Joe Carnesecea of Campbell said the flies were so thick that he could not see the light when he lit the electric bulb. But after spraying PHORACIDE, " just a few sometimes."

Get the same good results as these California Growers—use PHORACIDE

Don't let the gnat eat away your earnings.

Spray immediately after spawning and again after casing.
Prevent the gnats from getting started in the beds.

How PHORACIDE is used:—

PHORACIDE is sprayed only around doors, ventilators and walls. No spraying on mushroom beds at all! So there is no residue on mushrooms or danger to consumer. PHORACIDE has been registered and accepted for such application by the U.S. Dept. of Agriculture (Complete directions on label of container).

PHORACIDE IS NOW SHIPPED IN STEEL DRUMS WITH SPECIAL LINING TO PRESERVE PHORACIDE INDEFINITELY
(drum sizes 1, 5, and 50 gallons)

PHORACIDE COSTS LITTLE FOR THE VALUE RECEIVED:

Concentrate costs $13.50 per gallon in ONE gallon drums, and $12.50 per gallon in FIVE gallon drums, FOB Santa Cruz. (Shipping cost to East Coast is about one dollar per gal.)

One gallon of concentrate makes 10 to 15 gallons or over 100 lb. of spray material. So cost is only about 12 cents per pound of spray.

Formulated and Sold exclusively by:—

STOLLER RESEARCH CO.

P.O. BOX 1071, SANTA CRUZ, CALIF.

(*Dealers wanted to sell Stoller Research Co. Products*)

You can depend on Stoller Research to make mushroom growing profitable

*Trade Mark Regist., proc., in U.S. Patent Office

The need for a well proved
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For USE WITH WHEAT STRAW

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SMALL ADVERTISEMENTS 3d. a word

J. E. R. SIMONS LTD. offer: Adco M, Baskets (Chip and Cardboard), Bleach (Calcium and Sodium Hypochlorite), Boxes (new purpose-made and once used fish), " Comporoto " Manure Turner, Tungstalite Electric Lamps, Fertilisers, Fibreglass, Fungicides (all types), Gypsum, Hose, Insecticides (all forms), MRA Activators, Paper, Peat, Roofing Felt, Rubber Bands, Santobrite (for dipping trays and timber), Smoke Generators (in all sizes), Spraying Equipment, Thermometers and many other lines. Let us know your requirements. Enquiries for mushroom growing and general horticultural equipment welcomed.

We advise on Culture, Packaging and Marketing. J. E. R. SIMONS LTD., HARLOW, ESSEX. Tel. POTTER STREET 65 & 222. Sole Distributors for MOUNT SPAWN—Moist, Dry, Granular and Grain.

PURE DRIED GROUND POULTRY MANURE. This pure, natural organic is regularly used by prominent mushroom growing firms. It represents an invaluable *organic* activator for stable manure. Finely and evenly ground, it is convenient and clean to handle and being packed in ½ cwt. sacks, the weight you receive is *guaranteed*. Sample and prices (which vary according to the distance for carriage from our Works) on application. Sole Producers:—THE HAMPSHIRE GUANO CO. LTD., SOBERTON, SOUTHAMPTON. (Est. 1937). Manufacturers of " Gunos " (Regd.) Brand Fertilisers.

PORTABLE BOILERS for Peak Heating and/or Soil Sterilizing, with equipment to suit users. REED BROS. (Engineering) LTD., Cuba Street, Millwall, London, E.14. Telephone: East 4081.

CHALK AND CARBONATE OF LIME. Best quality Ground Chalk and Derbyshire Limestone supplied in bags; also broken chalk and limestone. DERBYSHIRE STONE LIMITED, Matlock. Telephone: 741.

FOR SALE. Mushroom Farm 7,500 sq. ft. West Sussex. With modern bungalow. Room for expansion. Box No. 18.

FIBRE GLASS WOOL NEW—20 lb. Bags 12/6. Excellent for all insulation work. Limited quantity only. J. E. R. SIMONS LTD., Harlow Essex.

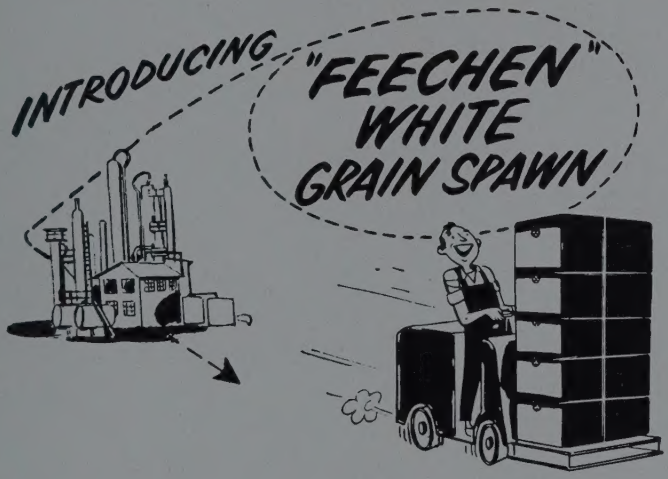
MODERN MUSHROOM FARM FOR SALE, 3 acres, road frontage, complete equipment. Cropping area 3,000 square feet, on three-tier shelves in 2 Handcraft huts, lined Onazote insulation; concrete and iron structures, inner fly doors, electric light, water, concrete floors and surrounds. Covered concreted composting shed. Ample room for large expanion. Picturesque old white weatherboard house if required. Mortgage available. Delightful garden, fish pond, river and near old weald village. FARM ASPARAGUS CROP pays rates, building and land taxes. Apply further details to Secretary MGA, or T. Terence Leach, Hawkhurst Court, Wisborough Green, Sussex,

INSULATION against cold and heat is helped by the use of Clinker (" Breeze ") Blocks. Coopers, Builders' Merchants, Ashford and Canterbury.

WANTED.—Four hotwater boilers each to heat 3,000′ of 4″ pipe, must be oil fed. New or second-hand—would take conversion job. R. C. DARLINGTON, Hastingwood, Harlow, Essex.

NOTTINGHAM Company require mushrooms urgently. Write for managing director to visit you. Box No. 5.

WANTED DAILY loadings of good quality Mushrooms. Highest possible prices paid. Consign with confidence to:—J. R. Nason Ltd., Wholesale Market, Nottingham.



Ask

R. C. Darlington

HASTINGWOOD - HARLOW - ESSEX

THE LINFIELD MANURE TURNER

After three years of exhaustive testing, Messrs. A. G. Linfield Ltd. have decided to put the Linfield Manure Turner on the market for the Home and Overseas Buyer.

This machine will drive into a stack of Manure through all stages of its composting without manual assistance, water is applied through controlled valves, and the result is a magnificent compost.

The speed of the machine is $1\frac{1}{2}$ miles per hour maximum, to 1 ft. per min. working pace, and many intermediate gears both forward and reverse.

The price of the machine is **£4,146 5s. 0d.**
ex Biggar, Scotland.

Enquiries can be forwarded to :

A. C. CORDERY LIMITED

PULBOROUGH - SUSSEX - ENGLAND

who are the sole agents for the Linfield Turner

The specifications of the machine are set out below.

WORKING DIMENSIONS OF MANURE TURNER:
Length—20′10″ Height—10′6″, Width—9′6″.

SHIPPING DIMENSIONS:
Length—12′6″, Height—10′6″, Width—9′6″, Weight—7 tons 10 cwts.

ENGINE:
Perkins P4 Diesel. Bore—$3\frac{1}{4}$″. Stroke—5″. No. of cylinders—4. Swept Volume—192.4 cu. ins. 3.15 Litres. R.A.C. Rating—19.6. Setting—1,250 r.p.m.—29 b.h.p. Max. working torque in lbs./ft.—123 (17.0 Kilogrammetres) at 1,000 r.p.m. Fuel consumption (.86 SP.GR.)—.36 pint (.205 litre) per hour. Firing order—1, 3, 4, 2.

Published by the Mushroom Growers' Association, Agriculture House, 25-31 Knightsbridge, London, S.W.1 and printed by W. S. Maney & Son Ltd., Russell Street, Leeds 1